THE AMERICAN JOURNAL OF

OPHTHALMOLOGY.

VOL. VII. MARCH, 1890. No. 3.

TUMORS OF THE OPTIC NERVE, WITH REPORT OF TWO ORIGINAL CASES.

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Read before the Section of Ophthalmology at the Fortieth Annual Meeting of the American Medical Association, June, 1889.

Diseases of the orbit present a very interesting group. They are very numerous, considering the size of the orbital cavity and its somewhat isolated location. Here we find tumors malignant and non-malignant originating in the orbital cavity, as well as growths from the nasal fossæ and the cerebrum, which encroach on it from different directions. Each one of these subjects might well command our earnest attention, but I propose to mention one class only, tumors of the optic nerve. They are comparatively rare, there being at present less than seventy cases on record. With your permission I will give a hasty resume of the literature at my command on the subject and then give in detail the two cases which have come under my observation.

[1]This article already published in the Journal of the American Medical Association, is here reprinted at the author's request, as he hopes it will thus reach a larger circle of readers.

In Vol. xxv, *Graefe's Archiv.*, Dr. Willemer, of Göttingen, reports twenty-two cases which had up to this time been reported. These include nine cases already reported in Vol. xix by Dr. Goldzieher, of Heidelberg, three of which he had himself operated on. He adds as an appendix five more cases, making twenty-seven in all. He gives a full and concise description of them macroscopically and microscopically, and an exhaustive statement of the various questions relating to growth, development, pain, probability of return, etc. It is a very comprehensive paper, and will well repay any one interested to read it carefully. Beginning with the case reported by Heymann in 1842, he gave in detail all the cases by Rothmund, Graefe, Sichel, Jr., Horner, Brailey, Goldzieher, Gruening, Leber, Alt, Mauthner, Holmes, Forster, and others, and gives in detail two cases observed by himself.

Dr. A. Vossius, of Königsberg, in *Graefe's Archiv.*, Vol. xxviii, part iii, adds a contribution to the knowledge of the true optic nerve tumors, i. e.; those developed within the external sheath. He says in substance as follows:

Among the twenty-seven real optic nerve tumors described by Willemer, A. f. O., Bd. xxv, 1, the sarcomata play the leading role. These were partly fibro, partly glio-sarcomata, and most of them were combination tumors mixed with myxomatous tissue. Fourteen cases, or 52%, were of sarcomatous character; six cases, or 23%, were myxomatous; five cases, or 15%, were fibromatous; one case was described as a scirrhus carcinoma, and one peculiar case was neuroma verum. The classification of all there cases has been very arbitrary, especially those described as myxomata and fibromata.

Imperfect methods of examination were the reason for inexact classification of tumors which were observed in past years. Pure myxoma and fibroma may be considered a rarity.

The size and consistency of the tumors vary; the more tissue they contain, the softer they are. The external sheath surrounded the tumor in its entire extent, with but slight change in its structure; the external sheath and the tissue of the intervaginal space were chiefly involved. The optic nerve itself

showed a variety of conditions; it lay either unchanged in the middle, or more or less eccentric in the tumor substance. On the other hand it was recognizable only at its commencement near the eyeball, while near the middle of its course it was completely lost. Usually only one eye was affected; in rare cases an extension of the tumor involved the intracranial part of the nerve as far as the chiasma. A case of von Graefe's is recorded where both nerves and the chiasma were almost cempletely involved in a tumor which extended backwards to the pons.

In a case of Leber's there was found a multiple knotty swelling of the optic nerve in a normal appearing eye, the cause of which was a tumor of the same character in the other eye, for which the first eye was enucleated.

The years of childhood appear to be especially predisposed to the growth of these tumors; as is likewise the case with the development of glio-sarcomata of the retina, it is probable that both these varieties of tumors take their origin during fœtal life. Heredity has never been proven in the case of these tumors, yet very frequently their discovery very soon after birth gives reason to suspect such an origin. Trauma is frequently the cause, both in childhood and in adult years.

The first and constant symptoms of true optic nerve tumors is exophthalmos, with slow and painless development. The motions of the eyeball are not affected until late, because the muscles are not involved, and because no attachment takes place between the surfaces of the eyeball and tumor. A second important symptom is an amaurotic condition of the eye. A suppurative keratitis sometimes results from the exophthalmos, and finally a degeneration of the entire eyeball.

A return of the tumor following enucleation has seldom been observed. Five cases are reported of death following soon after enucleation from meningitis, and two cases of death after an interval of several years from propagation into the brain.

The first case reported by Vossius was in a boy, æt. $2^1/_2$ years. The parents say that a few weeks after birth a peculiar appearance of the left eye was noticed. The papilla was very

much swollen, of a whitish color, and the vessels very tortuous. The eye and the tumor were removed. Microscopic examination proved the growth to be a myxosarcoma,, and it was located in the inter-vaginal space.

His second case was a boy, æt. 8 years. Exophthalmos is said to have arisen the previous year after an attack of whooping-cough. There was white atrophy of the disc without indication of previous neuritis. Two years later a firm elastic swelling could be felt below and behind the eyeball. Motion of the eye downward and outward was defective. Antero-posteriorly the tumor measured 42 mm., the greatest height 22 mm., and width 27 mm. The arachnoid sheath was thickened, but the chief part of the tumor arose from the tissue of the intra-vaginal space. A strip of hæmorrhage existed around the periphery close under the dural sheath. The color of the periphery was a moss-green, while the middle was yellowish and lighter. A longitudinal section of the tumor mass shows an intricate fibrous network with numerous cells and more or less coarse connective tissue; occasional groups of myxomatous masses, among which were strongly colored balls and knotty masses; no nerve fibres.

In *Gaefe's Archiv.*, Vol. xxxiv, 1888, Prof. Dr. Schiess-Gemuseus reports a case of total myxosarcoma of the optic nerve removed with retention of the eyeball. It was in the person of a girl, æt. $12^1/_2$ years. In childhood her parents noticed that she could not open the right eye quite as well as the left, but recently it has become larger than its fellow. The ball is also turned downward and outward. Vision is reduced to $^6/_{12}$ and the optic nerve presents a pronounced choked disc. In September, 1885, three months after her first visit to the clinic, vision had been reduced to $^6/_{20}$ and a hard tumor could be felt with the finger between the ball and the upper edge of the orbit. He decided to try to remove the tumor and save the globe. The operation was a brilliant success and the girl still retains the eye, and so far there has been no reproduction of the tumor. The tumor has the shape of a rounded spindle, is completely surrounded by a dense connective tissue capsule,

which is merely the external membrane of the optic nerve sheath. It was sausage-shaped, surrounded the nerve and pressed upon the eyeball. At the rear end it passed close upon the optic foramen; the length of the nerve enclosed within the tumor was 37 mm.; the transverse diameter close to the ball was 13 mm.; its greatest diameter was 20 mm. The surface of the tumor was covered with numerous smooth elevations and depressions; the covering membrane was easily removable from the substance of the tumor. A bile-like substance filled the tumor, resembling more a secretion than a tissue. Microscopically the tumor shows a number of circular or rod-shaped nuclei, with here and there some fine free fat cells. The whole seems to be composed of a more or less dense fibrous mass of uncommonly long, fine, delicate fibres most of them containing somewhat oblong nuclei, others more round and occasionally quite long, rod-like nuclei; in general, each fibre contained one nucleus. The dural membrane encloses the tumor with an average thickness of $^{6}/_{15}$ mm.; processes extend into the body of the tumor from the dural sheath. The optic nerve fibres are everywhere sharply defined from the fibres of the tumor. The tumor is developed between the inner and the outer nerve sheaths.. The thickness of the pial membrane varies from 0.6 to 0.12 mm. The integrity of the optic nerve is remarkably preserved; no trace of fatty degeneration

Conclusions.—The pathological-anatomical examination shows with certainty that the tumor is not a neuroma, and that the nerve in its pial sheath is nowhere involved, the tumor being developed between the pial and dural membranes. Penetrating all through the fibrous structure of the tumor are very numerous blood-vessels having very thick walls. In many places there are œdematous spots. The growth of the tumor around the nerve was not everywhere equal in thickness, the nerve lying in some parts of its course against the dural sheath, in others in the middle of the tumor. The tumor has much similarity to those described by Willemer and Vossius as myxosarcomata (A. f. O , Bd. xxv and Bd. xxviii). The great vascularity and the thickness of the vessel walls are very charac-

teristic; the entire tumor must have originated with a slow growth from the fibres of the arachnoid. It is remarkable to find the optic nerve retaining so nearly its normal condition, surrounded as it is intimately by a growth of such size and character. The pial sheath is broken through by the growth of the tumor in only a few places. The macroscopical form is similar to those described by Willemer and Vossius—spindle-form; the contents a soft oozing mass.

The pathological-anatomical condition explains fully the reason of the varying state of the vision during the development of the tumor. The nerve, surrounded as it was by a soft very vascular mass, suffered occasional compression, in consequence of which the choked disc was to be seen without the ophthalmoscope.

The present case is especially interesting owing to the preservation of the eyeball. Knapp was the first who removed a similar tumor without sacrificing the globe, but the eyeball was lost later through suppurative keratitis. Dr. Gruening, however, had a successful case, but the tumor was a small one (size of a hazelnut) and situated close to the eyeball.

Mr. Geo. Lawson, in the Royal London Ophthalmic Hospital Reports for January, 1888, reports a case of tumor of the optic nerve, which he says is the third one which has occurred in his practice.

In the reports of the hospital for August, 1882, is the first case. Here he says that "tumors of the nerve are comparatively rare and may occur in two ways: First, they may be external to the nerve fibres and spring from the dural sheath of the nerve; second, they may grow from within the nerve, being intimately associated with the connective tissue between the nerve fibres and constituting a neuroma." He then report and illustrates a case where the growth originated from the dural sheath of the nerve." In the same number of the Reports is a case of so-called "spurious neuroma" of the optic nerve, reported by Dr. J. W. Hulke. He says that "post-ocular intra-orbital tumors of the optic nerve and of the sheath are of such rare occurrenc that the following case appears worthy of per-

manent record. The extremly slow rate or increase of the proptosis, indicative of correspondingly slow growth of the tumor, and the relative freedom of the movements of the eyeball, together with the normal appearance of the fundus oculi, had inclined me to regard exostosis as the most probable cause of the proptosis, and to reject as improbable a sarcoma or carcinoma of the orbital walls or optic nerve. This, however, proved erroneous."

The case is as follows: Caroline, æt. 19 years, a thoroughly healthy-looking brunette, was admitted on July 6, 1881, into the Middlesex Hospital. She had extreme proptosis of the right eyeball to the extent that even with a strong effort she could not close the eyelids, and sometimes in the attempt they slipped behind the eyeball. This occasionally happened in the act of winking, and it was so painful to her, and the effect so distressing to those about her, that she shunned society and was rendered more unhappy by this than by the loss of sight. The eyeball moved consensually with the other, and nothing unnatural could be felt within the borders of the orbit by pressure through the eyelids. Vision was reduced to quantitative perception of light. With the ophthalmoscope nothing unnatural was discernable in the optic nerve or retina. The external aspect of the eyeball was perfectly natural.

History.—An elder sister who accompanied her said that the unnatural prominence of the eyeball began to be noticed in her sixth year, and that its increase has been very gradual and unattended with pain, but with progressive loss of sight.

The eyeball and the tumor were therefore removed together, the optic nerve being severed close to the foramen opticum. The tumor was firm, of a spherical outline, in size about one-third less than that of the eyeball, from which it was separated by a portion of seemingly healthy optic nerve somewhat more than half an inch long. The extremely slow growth of the tumor (dating its beginning from the time when the protrusion of the eyeball was first noticed) is a remarkable circumstance, and one well calculated to lead to a mistake in diagnosis.

Structure.—The short piece of nerve that intervenes between

the eyeball and the tumor is folded on the latter in such a way that the two bodies lie almost in apposition. Except for some thickening the dural sheath passes unchanged over the mass, but the loosely arranged fibres of the intervaginal space are enormously increased in the neighborhood of the entrance of the nerve into its front part. They also bear far more nuclei than normal. Towards the center of the tumor they gradually become replaced by an imperfectly fibrillated tissue containing numerous cell elements, of which the majority are small, perhaps .005 mm. in diameter. All gradations of size are found up to the largest, which are .026 mm. in diameter, oblong, and perhaps slightly drawn out at the ends, with several dot-like nuclei and numerous granules. The pial sheath and nerve fibres lose themselves in approaching the center of the tumor. The new growth appears to be a sarcoma taking its rise in the loose tissue of the intervaginal space, most probably from the nucleated cells found upon its fibres.

In the journal referred to above Mr. Lawson says: "Tumors of the optic nerve behind the eye, but within the orbit, are rare. In my own practice this is only the third case I have had. The first case was recorded in the *Ophthalmic Hospital Reports*, Vol. x, p. 296; the second in the fifth edition of my 'Manual of Diseases and Injuries of the Eye,' p. 238; and the third is the case I have now to relate. In each of these the eye was blind.

"The symptoms in the following case were sufficiently pronounced to enable me to suggest that the growth in the orbit was probably a tumor of the optic nerve behind the eye. They were: A protrusion of the eye downwards and forwards, but the proptosis of only a moderate degree; steady loss of sight, first noticed with the commencement of the proptosis and terminating in complete blindness.

"The prominent symptoms which seem to indicate tumor connected with the optic nerve are proptosis, with early impairment of vision. The loss of sight in orbital tumors not connected with the optic nerve is caused either by the stretching of the optic nerve from the proptosis, or by the pressure

of the growth on the nerve. There is seldom complete blindness unless the growth by its side has destroyed the functions of the optic nerve either by pressure or stretching. In this patient the defect of sight was an early symptom, which progressed to blindness before there was a sufficient stretching of the optic nerve to account for it, or a large enough growth in the orbit to produce it by pressure. Lastly, with the ophthalmoscope there was seen white atrophy of the optic nerve, with enlarged retinal veins, evidently due to the pressure of a tumor on the nerve, and, from its comparatively small size, probably directly connected with it.

"Edward R., æt. 12 years, admitted July 25, 1887.

"*History.*—Two months ago his left eye was first noticed to be 'larger' than his right; since that time it has gradually increased and the sight has gradually failed in it. He has not had any pain in the eye, but headache, frontal and behind the ear on his left side, at times.

"*State on Admission.*—Left eye proptosed and misplaced forward and downward; movements of eyeball good. At the upper and inner part of the orbit is felt a hard mass extending backward in close contact to the roof of the orbit. There is no nasal obstruction or deafness, no posterior palatine growth, and no glandular enlargement. He has no perception of light with the left eye; the pupil is inactive to light. By ophthalmoscopic examination the disc is seen to be white and the margin blurred, the veins big and tortuous and obliterated in places near the margin of the disc. T. n. The right eye is normal.

"He introduced a speculum between the lids and excised the eye with the tumor around the nerve *en masse*. Behind the globe, which upon examination presented nothing unusual, was a tumor surrounding the optic nerve and extending backwards from the sclerotic a distance of 2½ mm. In its widest part its diameter was 18.5 mm. Irregularly pear-shaped, with the smaller end forwards and with a lobulated surface, it was entirely enclosed in the optic nerve sheath. At the posterior limit of the growth, where the nerve emerged, it and the sheath

were in contact, but the nerve was somewhat thickened. The tumor was fairly firm to the touch, and near its anterior end were felt one or two small cysts beneath the capsule.

"*Microscopical Examination.*—The new growth is a sarcoma of loose connective tissue type, which in parts is undergoing myxomatous degeneration. In those parts which are apparently free from this change the stroma is finely fibrous and forms in places a delicate reticulum resembling that met with in lympho-sarcoma, with this difference, that there are no cells in the meshes. Throughout the growth the cells are very loosely arranged and there are no clumps of cells, such as are usually met with in the true myxo-sarcomata. The cells are round and oval, but the former largely predominate. No spindles were found. There are numerous small areas of myxomatous degeneration, but in no section were there found the translucent spherules described in tumors like this one by Vossius, Leber and others. A few vessels in the growth show marked hyaline degeneration of their walls, which are greatly thickened and their lumen almost obliterated; but in none of the sections examined were there any hyaline appendages to the degenerated vessels.

"Scattered through the optic nerve are large numbers of cells, which are identical in appearance with the cells of the new growth. The nerve fibres show little if any change, but the trabeculæ are thickened. The pial sheath can be traced unbroken over the thickened nerve, but it is being invaded by the tumor cells. The dural sheath, which is but loosely attached to the tumor, is not implicated. Though it is impossible to tell with certainty the site of origin of the tumor, it is most probable that it grew from the connective tissue of the inner sheath, or from the loose tissue of the intersheath space."

Wolfheim, in his inaugural dissertation, December, 1887, Koenigsberg, collects together the cases of tumors of the optic nerve which have up to that time been published (42 cases up to 1884). He adds to them those of which up to this time no mention has been made since 1884. He gives a detailed ac-

count of a new case, so that the total number of published cases amount to 61. The sarcomata were the most numerous, amounting to 49.

The new case was as follows: It was in the person of an eight-year-old boy, in whom the left eye had become gradually more prominent. There was pronounced swelling of the papilla. On the temporal half of the papilla, at the junction of some small blood-vessels, lay three small, round hæmorrhages. Digital exploration of the orbit revealed a firm tumor probably connected with the optic nerve, of an irregular surface, which extended back to the region of the optic nerve. The optic nerve was severed close to the optic foramen and removed with the globe.

The tumor began 7 mm. behind the globe and presented a post-horn-shaped outline. The length of the growth was 27.5 mm., its breadth 21 mm., and its height in the middle 24 mm. The growth was covered with a strong capsule, which constituted the immediate continuation of the dural sheath of the optic nerve. When incised it presented a homogeneous appearance. The result of the microscopic examination showed it to be a genuine spindle-celled sarcoma with partial myxomatous degeneration. At the same time it was very vascular and filled not only the sub-dural space, but had extended from the pial sheath into the nerve itself, and apparently had inserted itself in the trabeculæ, projecting into the trunk of the nerve.

In the *Journal of the American Medical Association*, December 10, 1887, Dr. George E. Frothingham reports two cases of tumor of the optic nerve occurring in young people, one a lad æt. 7 and the other a girl æt. 17 years. In both the eyes were enucleated with the tumors. In one case there was a papillitis, in the other there was not.

In the case of the boy the tumor involved the entire substance of the optic nerve from the foramen to the globe. It was $1^{5}/_{8}$ in. in its long, and $1^{1}/_{16}$ in. in its short diameter. In the other case it was not quite so large, and the ocular end of the nerve was free for about half an inch. Both were round-celled sarcomata. No return to date.

In the AMERICAN JOURNAL OF OPHTHALMOLOGY, Vol. i, 1884, p. 243, Dr. Aub reports a case of myxosarcoma of the optic nerve. It was in the person of a married woman, age not given. The microscopic examination was made by Dr. Alt, of St. Louis. He says it consists chiefly of spindle-shaped and stellated cells. In many parts of the growth the mucoid substance is accumulated in the form of smaller and larger cysts of irregular and round shape.

I come now to the first of my own cases: J. D., æt. 12 years, was seen for the first time July 18, 1886. He said the right eye had been amblyopic since last spring. There was no history of trauma and he had not suffered any pain, but had continued in school all the time until impairment of vision and probably diplopia had attracted his attention to the eye. There was a slight exophthalmos and vision was reduced, + T.1. The media were clear. There was well-marked optic neuritis, the disc was swollen and quite prominent, and the vessels upon it obscured. Vision was reduced to the perception of shadows of the hand outward. As there was no reason to suggest or recommend an immediate operation, I put him on a course of kali. iod. and ordered him to come back again in a month.

In August his vision was slightly better; he could count fingers at one foot. I saw him again in October, and his vision had improved to counting fingers at five feet. The swelling of the optic disc had subsided considerably, but there were evidences of optic nerve atrophy coming on.

I did not see the patient again until April 5, 1888. At this time there was a marked change in the appearance of the eye. Vision was entirely obliterated and there was atrophy of the optic disc. There was proptosis of the eye, and a tumor or growth of some kind could be felt in the upper and outer portion of the orbit. It felt firm but somewhat elastic. Motility of the eye was unimpaired. April 9, I made the operation, hoping that I might be able to remove the tumor and save the globe. I made a free incision through the conjunctiva parallel with the external rectus muscle, and then another incision

close to the cornea at right angles to it, severing the external rectus muscle, leaving a little stump attached to the sclera, in case I should want to unite the cut ends of the muscle. After passing my finger along the tumor and exploring its location and size as well as I could, I became convinced that it would be impossible to save the globe and remove the tumor.

I then proceeded to remove the globe and a:terward the tumor. There were no special difficulties in the case and the globe was severed close to the optic foramen.

FIG. 1.

Macroscopic Appearance.—The tumor was spindle-shaped, or rather sausage-link-shaped. It was quite regular in outline and was enclosed in a thick, firm capsule. Its outer surface presented a wrinkled or corrugated surface. It was 28 mm. in length, and 20 mm. in diameter at the thickest portion. It was quite firm and solid. (See Fig. 1).

Microscopical Examination by Dr. James M. French.—Preparatory to microscopic examination, the specimen was hardened in Mueller's fluid and absolute alcohol. Sections were then cut $^{1}/_{500}$ inch in thickness and part of them stained in hæmatoxyline, part in alum-carmine.

On examination the growth was found to be a sarcoma of the small round-celled variety, very vascular and in some parts supported by an abundance of fibrous tissue, but for the most part exhibiting a large amount of mucoid tissue, and consequently belonging to the class designated "myxosarcomata."

The tumor mass completely surrounded the optic nerve,which still remained visible, even to the unaided eye, at a point near

the centre of the transverse section. The small round cells which constituted the most striking feature of the growth were of nearly uniform size, measuring from about 3.5 μ. to 5.0 μ., each containing a distinct nucleus and more or less granular protoplasm. The intercellular spaces are filled by a colorless, translucent substance, in some parts amorphous, but in most parts marked by exceedingly delicate fibrillation. In the more translucent regions were found in considerable numbers the indistinct fusiform and stellate cells with long, delicate prolongations characteristic of mucoid tissue.

Fibrous tissue bands of variable width subdivided the neoplasm into numerous compartments of varying size, but never very large. In these the cells rested without definite arrangement. The fibrous tissue is everywhere very vascular. In some places the blood-vessels are of large size with firm muscular walls; in others mere spaces without defined walls. As in all sarcomata, these blood-spaces are abundant in the cellular portion of the tumor, appearing like narrow channels washed through the mass of cellular tissue. Along the course of the blood-vessels, particularly those of comparatively large size, pigment has been deposited, partly as a diffused yellow-brown stain, partly in a granular form. In some places this discoloration is decided, in others but very slight.

The optic nerve was found invested in a much thickened pial sheath which completely separated it from the surrounding neoplasm. The nerve had, however, undergone marked degenerative change. The fibrous tissue envelope of the nerve fibres (neurilemma) had undergone a decided thickening (sclerosis), producing an equally decided atrophy on the nerve fibres. Scattered throughout the substance of the nerve were a large number of amylaceous bodies, some of which were intact and exhibited the characteristic parallel lines, others had been fractured, probably in the preparation of the specimen.

The tumor had for its envelope the external fibrous sheath of the optic nerve. This had, however, undergone decided thickening, and was so loosely attached to the neoplasm that a considerable portion of it was unavoidably detached in the

preparation of the specimen for microscopical study. In addition to the increase in thickness of this sheath, there was a very manifest increase in the number and size of the blood-vessels. Numerous pigmentary deposits were also found, and in a few places cyst-like openings. In some portions there were also evidences of the extension of the neoplasm into the meshes of the fibrous tissue; it was nowhere found, however, to have involved the entire thickness of the sheath.

The appearances obtained from a longitudinal section of the growth were not materially different from those just described. The alveolar spaces, if such they could be called, presented a little greater average length, showing that the bands of fibrous tissue forming their walls to a certain extent followed in its course the long axis of the growth.

The fibrous tissue envelope of the neoplasm was found to be continuous at the extremities of the tumor with the dural sheath of the nerve, thus supporting the supposition that the growth originated in the connective tisse of the nerve sheath. There has been no return of the tumor up to date.

My second case was in the person of a young lady. Miss Nellie S., æt. 22 years, a strong, well developed young woman in excellent health, when eight years old fell while playing on the ice and struck the back of her head. She was insensible for a short time and there was tenderness in the back of the head which continued for three months afterward. About two years later she had an attack of malarial fever; there was some swelling and œdema of the lids, and while testing her vision she discovered that her right eye was nearly blind.

I saw her first in 1880, about seven years after the accident above referred to. At that time there was atrophy of the optic disc and vision was reduced to *nil.* There was a slight prominence of the eye and a slight divergence. There was no pain, and the eye gave her no inconvenience except from loss of vision.

I have seen her from time to time up to the present year, and there has been a gradual increase in the prominence of the eye. There have also been shooting pains occasionally

in the orbit and in the right side of the head, which have increased recently. The eye now stands about 7 mm. in advance of its fellow. The motions are perfeet in all directions, and it is not possible to detect any tumor by pressing the finger between the walls of the orbit and the globe. The ball cannot be pressed into the orbit.

FIG. 2.

I made the operation March 9, 1889. After severing all the muscles, I found that the growth was very firmly attached to the apex of the orbit and it was with some difficulty that I detached it. It came out entirely, leaving the bony wall of the orbit smooth. There was a mild orbital cellulitis following it but it seemed to subside quietly and she returned home in about ten days. After her return home she seemed to do well for about two weeks when she was attacked with typhoid fever from which she died about six weeks after the operation.

Macroscopical appearance of the tumor: (See Fig. 2) It was triangular, or rather irregularly pyramidal in shape. The base of the pyramid was attached to the inner wall of the orbit. The growth was enclosed in a strong capsule which presented a uniformly smooth surface except inward where there were three small elevations or nodules. It appeared as if the tumor had made an attempt to perforate the capsule at these points. The optic nerve was not involved for a distance of 8 mm. from the globe. The base of the tumor (the portion attached to the bone)

measured 25 mm. in length and 14 mm. in breadth. The surface measurement of the tumor on its longest side was 40 mm. and its shortest 20 mm. It measured 20 mm. in thickness. Macroscopically it presented a pinkish grey color and was of homogeneous consistency.

Macroscopical examination: The specimen after being thoroughly hardened was first cut transversely at a point near its middle. Ocular examination of the cut surface revealed an almost homogeneous mass; a few linear subdivisions were however visible on close inspection. No evidence of the optic nerve could be discovered. The tumor was enveloped in a thin fibrous capsule which was manifestly continuous with the external sheath of the optic nerve projecting from its extremity.

Microscopic examination showed the tumor was a myxo-sarcoma, the cellular elements of which were of the small spindle variety. The cells throughout the greater part of the section were closely aggregated with a very little inter-cellular tissue, and this was for the most part amorphous in character. The growth was however sub-divided into numerous small and very irregular compartments by delicate bands of fibrous tissue. These supported blood vessels of embryonic character. Similar blood-vessels or channels were visible throughout the cellular masses. The growth was not, however, remarkable for its vascularity. The course of the spindle cells was peculiar and interesting. In some portions of the growth cells were seen which had been cut longitudinally and therefore appeared as perfect spindles, and in other portions, as is usually the case, cells had been cut obliquely or transversely, causing them to appear oval or round.

In one portion of the growth corresponding to the central region of the tumor, there was a peculiar circular or whorled arrangement of the cells, The center of these whorls was found to be the axis cylinder of an optic nerve fibre. These fibres were found so widely separated that the space occupied by the remains of the nerve was more than four times the normal diameter of the optic nerve. The nerve fibres had undergone marked atrophy. Numerous amylaceous bodies were also

present in the same region of the tumor. The pial sheath of the optic nerve had been so incorporated with the new formed tissues, or so completely replaced by them as to be indistinguishable.

In the longitudinal sections the appearances were not materially different from those observed in the transverse cut, so far as the neoplasm was concerned. There was abundant corroberative evidence of the persistence of nerve fibres in the region of the growth that has been described. The mucoid tissue seen in the transverse section was even more apparent in the longitudinal, resembling in some parts broad bands translucent tissue with a few nucleated cells and in some instances surrounding small islands of neoplastic cells.

The external sheath of the growth was found to be continuous with that of the optic nerve and there was no evidence of its having been invaded by the disease.

The two cases I have observed resemble several of those already reported, but especially those of Schiess-Gemeseus and Mr. Lawson. In the case of the former however the macroscropic appearance was very unlike that of the most if not all of the cases. He says that a bile-like substance filled the tutumor, resembling more a secretion than a tissue. In nearly all the cases the tumor was firm and elastic if not quite solid.

I have added to the sixty-one cases reported by Wolfheim, six new cases, viz: one by Mr. Lawson; two by Frothingham; one by Aub, and two from my own practice. All of these but one (that by Aub) occurred in young persons, and in this one the age is not given.

Two of these six cases may be classed with the sarcomata, and four with the myxo-sarcomata. The number reported to date do not furnish sufficient data from which to draw any very definite conclusion as to pathology and prognosis. There has been heretofore a somewhat arbitrary classification of these cases, but the present exhaustive and critical microscopic examination will place each case where it belongs.

We may say in general that these tumors occur more frequently in the young, that they are very slow of growth (as il-

lustrated by my second case), that they are sometimes congenital as in the case reported by Vossius, and that they may be of traumatic origin.

Microscopically they are sarcomata or myxo-sarcomata. One of the prominent symptoms to aid in differentiating between a tumor of the optic nerve and a sarcoma of the orbit, is the almost unimpaired motility of the ocular muscles in the former.

CLINICAL CASES AT THE NEW AMSTERDAM EYE AND EAR HOSPITAL, NEW YORK.

THOS. R. POOLEY, M. D., NEW YORK,

Surgeon-In-Chief

Reported by E. A. KIRKPATRICK, M.D., Resident Surgeon.

I. *Traumatic Mydriasis.*—David C., æt. 25 years, entered the dispensary on January 29, having been struck in the right eye with a piece of wood a half hour previously. His condition was as follows: R.V.=$^{20}/_{XX}$; L.V.=$^{20}/_{XV}$; slight abrasion of the right upper lid, a dilated pupil which did not respond to light and which was associated with a moderate hyphæma. The pupil was perfectly round, showing that the stretching and paralysis involved the whole muscular tissue of the iris and not a part which causes an irregular dilitation, the rule in mydriasis from a blow upon the globe. The cornea was clear, the sclera uninjured, the field good and no *paresis of accommodation.* Eserine was used locally for a day or two but was afterward discontinued. The patient was under observation for three weeks and at the end of this time both the mydriasis and hyphæma had entirely disappeared. R.V.=$^{20}/_{XV}$; L.V. =$^{20}/_{XV}$.

II. *Sympathetic Irritation Excited by Phthisis Bulbi.*—Mary G., æt 30 years, was admitted to the hospital February 5, with phthisis bulbi and iridocyclitis of the right eye accompanied by sympathetic irritation of the left. The patient gives a history of having suffered at the age of ten from measles followed by inflammation in the right eye which resulted in complete loss of vision for that eye. No history of trauma but there is of perforation. After a prolonged quiescence—a period of

seventeen years—the lost eye began to be sensitive, a condition which gradually became painful. During the same period the left eye has also been weak and at times painful. Condition upon entrance: Right eye phthisical, cornea shrunken, globe quadrangular and painful to the touch, especially about 15° to the inner side of the central vertical meridian in the upper quadrant. In the left eye slight lachrymation and photophobia were complained of, beside the weakness and sensitiveness above mentioned. L.V.=$^{20}/_{xxx}$ Hm. $^{1}/_{36}$. Jaeger No. 2 at 12″ showing some paresis of accommodation.

No pericorneal injection, media clear but pronounced hyperæmia of the optic discs. Enucleation of the right eye which was done on February 5, revealed the presence of ossification of the choroid. The patient progressed favorably and was discharged on February 8.

Returning to the dispensary on March 10, to secure an artificial eye, I found a healthy condition of the left eye which had been in a condition of sympathetic irritation previous to the enucleation of its fellow. No lachrymation, no photophobia, no sensitiveness, a healthy optic disc and full recovery of accommodation. L.V.=$^{20}/_{xx}$ Hm. $^{1}/_{60}$s. Jaeger No. 1 at 8″.

In this case we have an example of sympathetic irritation existing for years and not passing on to the much dreaded inflammation, also that the removal of the exciting eye is followed almost immediately by the cessation of symptoms of irritation.

III. *Episcleritis.*—Mrs. M., æt. 39 years, was admitted to the hospital February 12, 1890, suffering from episcleritis of the left eye. The patch of inflammation was localized on the internal portion of the eyeball, embracing about one-fifth of the extent of the ocular conjunctiva. Before entrance to the hospital for ten days the patient had complained of severe and continuous pain, supra-orbital and temporal in location, also epiphora and photophobia.

During this time hot applications had been vigorously applied while atropine had been instilled for the four days preceding her entrance with the effect of materially accelerating

the pain, and in no way alleviating the distressing symptoms. Thus we note atropinization as recommended by most authors to avert iritis only proved intensely irritating in this case. A critical examination revealed an uncomplicated episcleritis—there being no infiltration of the cornea, no iritic complication and no vitreous opacities. The sweat cure was adopted and proved highly efficacious. Six tablets of pilocarpine $^{1}/_{70}$ grain each were given by the stomach every day and the hot applications were continued. Twenty-four hours after admittance there was a complete cessation of the pain.

Although a rheumatic history existed no medicine was given for that constitutional diathesis.

This treatment was tenaciously adhered to with the addition of yellow ointment morning and evening in the second week. The patient was discharged on February 26, practically cured. All signs of active inflammation had subsided and in its place a blue patch of thickened superficial and episcleral tissue was conspicuous, a patch which shaded off and gradually lost itself in the healthy colored conjunctiva. On March 12, I saw the patient and found the eye still improved with less discoloration in the site of the past episcleritis. V.$=^{20}/_{XX}$.

TRANSLATION.

ON THE CIRCULATION IN THE RETINA IN CASES OF ANÆMIA FROM CHRONIC HÆMORRHAGES AND OF CHLOROSIS, AND ITS DEPENDENCE ON THE CONDITION OF THE BLOOD.

BY E. RAEHLMANN.

(*Zehender's Klin. Monatsbl. f. Augenhlk.*)

As is well known, Quincke as the first, and later on, Becker, described the visible pulsation of the retinal arteries in cases of insufficiency of the aortic valves. O. Becker, furthermore, found this visible pulsation in cases of aneurysm of the aorta, of Basedow's disease, and of chlorosis. My own researches finally have proven that the pulsation of the retinal arteries can be seen almost regularly in some forms of chlorosis, and especially often in chronic anæmia after hæmorrhages which recur frequently at intervals; sometimes also in neurasthenia.

Some of the exceptions to my theory of the origin of this arterial pulsation in anæmia and chlorosis taken by Schmall[1] have already been refuted partially, and partially weakened by A. Friedrichson.[2]

It is and remains a fact, that in many cases of anæmia arterial pulsation is exceedingly well pronounced, while in other cases it is totally wanting. In anæmia, especially in chlorosis, there exists often an, if not absolute, still relative, hyperæmia

[1]B. Schmall. A. v. Graefe's Arch. f. Ophtha'mologie, xxxiv., i. p, 37.

[2]Ibidem xxxiv., iii. p. 207.

of the retinal bloodvessels, aside from the appearance of pulsation.

I was of the opinion that those cases of anæmia which show pronounced arterial pulsation and hyperæmia are also clinically differing from those cases in which this pulsation as well as the hyperæmia are wanting, and I have been able to find a number of proofs for the idea, that in these cases we have to deal with a very hydræmic condition of the blood.

The following points gained by the direct examination of the blood have prompted this opinion.

1. That in most cases which show arterial pulsation the number of the corpuscular elements of the blood is, on an average, smaller than normal; that in some cases they are very materially, in others but little, but nearly always visibly diminished in number.

2. That in these cases the individual corpuscles show almost always a decrease in volume and are smaller than normal ones.

3. That most of these corpuscles contain less hæmoglobine, and are specifically lighter, and, therefore, in a watery solution, do not sink as easily to the bottom as normal corpuscles, and are more easily carried along by the fluids.

4. That in some cases of anæmia which showed a very pronounced and typical arterial pulsation in the retina, all three of these conditions were present, viz., diminished number of corpuscles, reduced quantity of hæmoglobine, reduced gravity and volume.

In many of these cases of arterial pulsation either a normal condition of the retinal arteries or a hyperæmia was present, which was something directly opposite to the general anæmic habit, and which, when the function was normal, could not be explained by local changes within the eyes. In the cases showing this repletion of the blood-vessels and pulsations, we have clinically to deal with anæmic or chlorotic individuals who are comparatively well nourished, have mostly a good quantity of subcutaneous fat, but a waxy skin and a so-called diaphanous complexion.

Aside of the usual complaints of chlorotics many complained of palpitation of the heart and of the blood-vessels of the neck; in many the heart's choc was tremulous; sometimes the left ventricle was dilated. In many the curve of the radial pulse showed a pulsus altus and celer.

On the other hand, I found in exceedingly many of the anæmic individuals which did not show a retinal pulsation corresponding to the anæmic aspect of their skin and mucous membranes, an anæmia of the retina, with narrow, straight bloodvessels, and the clinical symptoms of a progressive loss of strength, lassitude, feeling of weakness, inability to work, and symptoms of collapse. The paleness of the skin was, however, less pronounced than in the other form, and there was mostly an absolute lack of subcutaneous fat or the reduction of the former quantity of it, and a shrivelled, toneless skin of a pale gray color. Very often I found no diminution, or but a small one, of the blood corpuscles, and but a slight reduction of the quantity of hæmoglobine. We even saw not a few cases of anæmia in which the quantity of hæmoglobine and the relative number of the blood corpuscles were found normal, in spite of a pronounced paleness of the skin and mucous membranes.[1] Irregularities in the volume and shape of the corpuscles were often wanting. In these cases the radial pulse was mostly small and soft, and the heart choc normal.

There exists, then, according to my experience, no sharp line by which we might distinguish between two groups of anæmia which are clinically and ophthalmoscopically different. The differentiation above described is abstracted from the average conditions of all the cases examined, to the number of more than two hundred. According to the condition of their blood the chlorotic patients of the first group, following Larsche[2], would belong to the true chlorosis; those of the second group would be cases of pseudo-chlorosis. According to Graeber,

[1] It has but recently been shown by Friedrichson that the amount of hæmoglobine contained in the blood is but slightly dependent on the number of its corpuscular elements.

[2] L. Larsche. Die Anæmie. Christiania, 1888.

on the contrary, the patients of the first class would not be called chlorotic but anæmic, and those of the second class chlorotic. The fact that the arterial pulsation is not equally visible in all cases of the first group of anæmics, and that it is not totally wanting in all cases of the second group, may be explained by the very nature of the pulse.

As has been stated before, the arterial pulsation of the retina is a sign that the wave movement of the blood reaches abnormally peripheric parts. It arises when there are abnormal differences in pressure in the arterial system. These latter, when reaching into such small arteries as is the centralis retinæ, and becoming visible in the shape of the pulsation under consideration, are a valuable symptom in certain disturbances of the circulation of the blood. They are not solely an intersting ophthalmological freak, but the sign of something patheological in the circulatory apparatus; and the knowledge of their cause must be just as important, if not more so, for the internal clinician, as it is for the ophthalmologist. As soon as we have recognized the cause for the systolic and diastolic differences of pressure in the peripheral arteries, we have found also an explanation for the arterial pulsation. It is not necessary to look far for an explanation of an arterial pulsation in insufficiency of the aortic valves; we can satisfactorily explain these differences in pressure by the fact that the high wave, being thrown from the dilated ventricle into the arteries, regurgitates into the heart through the leaky valve.

For the arterial pulsation in anæmics we have to find another explanation. The pulsation is often as well pronounced as in typical cases of insufficiency of the aorta, although no anatomical lesions can explain the uneven pressure. How, then, will we explain the retinal pulse in anæmics? Right here the results of my examinations of the blood of anæmics and chlorotics become important. If the corpuscular elements are diminished, if they are smaller than normal, if on account of a lack of hæmoglobine, their specifically heaviest component, they have become more easily movable, the column of blood must also be more easily moved about by the action of the

heart, since there is necessarily less friction between the parts themselves, and between the parts and the walls of the blood-vessels. In consequence a weaker heart's action suffices to produce comparatively large effects in motion, and when the heart's action is normal or increased, as it often is in anæmia, and especially in chlorosis, the pulse wave is carried abnormally far into the blood stream, and can yet be in existenc in the smaller arteries which ordinarily show no pulse.

This effect must be the larger the thinner the blood of the anæmic.

According to Immermann we have in anæmia after repeated losses of blood a hypalbuminosis of the blood, since the tissues furnish the concentrated blood especially with fluids.

In chlorosis, however, according to Immermann, the quantity of the serum albuminates is probably normal. The statements of Becquerd and Rodiers agree with this opinion, since their chemical examination of the blood of six chlrotics gave in 1000 parts of blood, 72.1 parts of serum albumen, whilst the normal blood contains but 57 parts.

In order to find out more with regard to the quantity of albumen and water in the blood of anæmics and chlorotics, Mr. Zumft at my request has made a number of examinations of chlorotic blood, in Prof. Kobert's pharmacological laboratory. Twenty to thirty grammes of blood were withdrawn from the temple of the patients by means of a Heurteloup. These examinations are not yet concluded and their results will be published later on by Mr. Zumft. * * *

* * * According to our examinations, a hydræmic condition of the blood, combined with oligocythæmia and lack of hæmoglobine, are the main characteristics of chlorotic blood. Yet a number of signs seem to make it probable, that we have in many cases of chlorosis a true plethora serosa.

We may first mention the clinical reasons for this. In many chlorotics we find the physical signs of an increased action of the heart and blood vessels, abnormal pulsation of the large blood vessels, palpitation of the heart, above all, frequently, a dilatation of the ventricles, especially of the left one, which

then holds an immense quantity of blood, although there are no valvular lesions or stases in the circulatory apparatus.

In the same chlorotics we have also an abnormally high radial pulse. * * *

* * * Finally and pre-eminently does the dilatation of the retinal arteries prove a plethora serosa, since in many cases of chlorosis these blood vessels actually contain an increased quantity of blood. This fact is the more important, since the retinal blood vessels are the only ones in the body, the condition of whose contents can be directly seen.

Our observations, then, prove a hydræmic condition of the blood in chlorotics, as well as in chronic anæmia after periodical profuse hæmorrhages.

A thin blood, with a diminished number of abnormally small and specifically light blood corpuscles, must be abnormally and easily movable, and, therefore, as Cohnheim and Lichtheim have shown already, a more rapid stream of the blood and a quicker passage through the capillaries must result, even if the heart's action is not increased.

We must, therefore, vouchsafe to the thin condition of the blood a great influence in the causation of the pulse of the retinal arteries. The increase in the rapidity of the blood-stream which results from the hyperæmia and the reduced friction, must especially favor the locomotion, since the force with which the quickly moving column of blood is pushed against the convex part of arterial arches must cause a short and strong displacement of the whole tube.

The hydræmic condition of the blood of anæmics cannot be without influence upon the nutrition of the walls of the blood-vessels, and the observations by Israel, Thoma, Kaefer and Luck show that in chronic anæmia and chlorosis the elasticity of the bloodvessel walls is always reduced, that is, they are more easily dilated.

This easy dilatation of the blood vessels is, of course, prone to assist the other causes in their action in producing the arterial pulse.

This expansion of the bloodvessel walls by the pulse wave

must necessarily allow an existing inequality in the blood pressure to be felt abnormally far and long, so that it must be perceived in much smaller arteries than is usually the case. * * *

* * * The hydræmic condition of the blood can, as I have shown elsewhere, be recognized further by an abnormal transparency of the retinal bloodvessels. Not only are the bloodvessels abnormally pale, so that the venous blood is abnormally light and barely distinguishable in color from the arterial blood; it is even possible to see underlying blood vessels, or the outline of the optic papilla, through these enlarged bloodvessels. The pallor and transparency are dependent chiefly on the quantity of hæmoglobine in the blood; they were, however, most pronounced in cases in which there was also a diminution in the number of the red blood-corpuscles, aside from the lack of hæmoglobine.

It might not be impossible to explain the hyperæmia of the retinal arteries, as we find it not infrequently in anæmia and chlorosis, and which is in direct contrast to the aspect of the skin and the mucous membrane, by a lack of elasticity in the walls of the bloodvessels, confined to the retina. Since, however, the malnutrition of the blood vesselwalls, due to the abnormal condition of the blood, is not confined to the bloodvessels of the retina, but acts in the same manner on all the bloodvessels of the body, we assume that the abnormal size of the retinal bloodvessel s is simply a local symptom of a disturbance in the circulation which effects equally all of the peripheral bloodvessels.

The enlargement of the retinal bloodvessels remains almost the same at different stages of the disease, and disappears when the disease ends, that is, when the symptoms of anæmia disappear.

In a number of cases in young girls I found the pulsation and hyperæmia of the retinal blood vessels, in whom a prolonged period previous to the onset of the chlorosis, I had found a perfectly normal fundus, and in whom after the chlorosis had disappeared the fundus again became normal.

Generally the ophthalmoscopic picture is but little changed during quite a long time, according to the duration of the anæmia. The improvement, that is, the return to the normal, sometimes takes place rather suddenly and rapidly; usually it is slow and gradual. * * *

* * * Our arguments assuming a dilatation of the small blood vessels of the body, or at least of larger areas of them, is seemingly in contradiction to the pronouncedly pale skin, which is characteristic of anæmics and chlorotics. The fact is generally known that a sudden pallor of the skin is due to contraction of the blood vessels of the skin. Yet, there is also a continued pallor of the skin, aside from vasomotor influences, in individuals whose blood does not possess the faculty to produce the normal coloring. In these cases we can assume, that the pallor of the skin is due to abnormal narrow bloodvessels in the skin. This explanation might, even, be the correct one in cases of diminution of the absolute quantity of blood, in the true "poverty in blood" of the authors, as well as in acute anæmia following hæmorrhages. In chronic anæmia and chlorosis matters lie differently; since here the faculty of the blood to color is reduced, the skin must be abnormally pale, even when the peripheral bloodvessels have a normal calibre. There may even be a relative pallor, in spite of an increase in calibre concerning whole areas of bloodvessels, since the blood is abnormally pale.

The ophthalmoscope alone gives us the direct and unassailable proof of the existence of such discordant conditions; since the tissue, over which the enlarged vessels run, the optic papilla, is abnormally pale, in spite of the considerable degree of hyperæmia seen in the retinal blood vessels.

SOCIETY PROCEEDINGS.

TENTH INTERNATIONAL MEDICAL CONGRESS.

Invitation to Take Part in the Proceedings of the Section for Ophthalmology.

In accordance with the resolution of the Ninth Congress held at Washington, the Tenth Internation Medical Congress will be held this year at Berlin, opening August 4, and ending August 9, 1890. The delegates of the German Medical faculties and of medical Societies of the German Empire have elect-us, the undersigned members of a Sectional Committee of Organization. In this capacity we have the honor to cordially invite your participation in the proceedings of our section. We hope to enjoy the satisfaction of welcoming large numbers of our colleagues to Berlin and also of seeing our section meetings numerously attended. We append the programme of our Section as far as hitherto arranged with the request that any further proposals, as well as offers of addresses, papers, or demonstrations, may be sent in with as little delay as possible.

With the hope that the meeting of the Sections may prove interesting in themselves and useful to the advancement of science.

We remain most respectfully. The Committee of Organization for the Section of Ophthalmology.

Eversbusch, Erlangen; v. Hippel, Giessen; Hirschberg, Berlin; Leber, Göttingen; Michel, Würzburg; Schmidt—Rimpler, Marburg; Schweigger, Berlin; v. Zehender, Rostock.

All communications or inquiries regarding the business of the Section must be addressed to Professor Dr. Schweigger,

Berlin NW., Roonstr. 6. Other communications and inquiries of a general character must be directed to the general secretary of the Congress, Dr. Lassar, Berlin, NW., Karlstr. 19.

PRELIMINARY PROGRAMME OF THE SECTION FOR OPHTHALMOLOGY.

1. Sympathetic ophthalmia.
2. Trachoma.
3. The influence of the electric light upon the eye.

EXTRACT FROM THE GENERAL REGULATIONS AND PROGRAMME.

IX. In the meetings of the sections, questions and problems will be discussed, which have been agreed upon by the special Committees of Organization. The communications of those appointed by the committee to report on a subject, shall form the basis of discussion. As far as time allows, other communications or proposals, proceeding from members and sanctioned by the Committee of Organization may also be introduced for discussion. The bereau of each section decides as to the acceptance of such offered communications, and as to the order in which they shall come before the meeting, always provided that this point has not been already determined in the meeting itself by a decree of the section.

Scientific questions shall not be put to the vote.

X. Introductory addresses in the Sections must as a rule not exceed twenty minutes. In the discussions no more than ten minutes are allowed to each speaker.

XI. All addresses and papers in the general and sectional meetings must be handed over to the Secretaries, in writing, before the end of the meeting. The Editorial Committee shall decide whether—and to what extext—these written contributions shall be included in the printed transactions of the Congress. The members who have taken part in the discussions, will be requested to hand over to the Secretaries, before the end of the day, in writing the substance of their remarks.

XII. The official languages of all the meetings shall be German, English and French. The Regulations, the Programme and the Agenda for the day will be printed in all three languages.

It will, however, be allowable to make use of other languages than the above for brief remarks, always provided that one of the members present is prepared to translate the gist of such remarks into one of the official languages.

Those who take part in the congress shall pay a subscription of twenty marks (one pound sterling or five dollars) on being enrolled as members. For this sum they shall receive a copy of the transactions as soon as they appear. The enrollment shall take place at the beginning of the congress. Gentlemen may, however, be enrolled as members by sending the amount of the supscription to the treasurer[1] (with their name, professional status and residence appended).

[1]Treasurer's Address: Dr. M. Bartels, Berlin SW., Leipzigerst. 75.—Please enclose a visiting-card.

NEWS.

THE NEW YORK EYE AND EAR INFIRMARY.

The corner-stone of a new building for the institution is to be laid to-day (Saturday). The circular announcing the fact says: "As the infirmary is the oldest institution of the kind in the country, it appears to us, is one deserving of special notice at the hands of our local press. This event will bring together a notable company, no less on aacount of its municipal, scientific, and heroic interest, as the distinguished character of the gentlemen who will take part in the ceremonies. The Hon. Chauncey M. Depew will preside, the Right Rev. Henry C. Potter, Bishop of New York, will make the opening prayer, while the Hon. George William Curtis will deliver the principal address. The New York Eye and Ear Infirmary was founded in 1820. It was organized with a staff of two physicians, and the first year gave relief to six hundred patients. To-day the staff is represented by forty-six surgeons of the highest rank, while the number of patients is now annually close upon twenty thousand. The institution has gradually accumulated an endowment fund of $250,000, a sum fairly sufficient for its maintenance, but none of this sum can be diverted to building purposes without seriously crippling its resources and circumscribing its field of work. Yet a new building is an imperative necessity, on grounds of sanitation as well as those of lack of room for practical operation, not to mention laboratory work, ample facilities for which should be provided in connection with every institution of this character. The needs being as stated, the trustees and surgeons some time ago set about to raise a building fund. To date about $70,000 are subscribed, in large part the personal gift of the trustees and surgeons themselves. About $30,000 more is needed to complete the enterprise as now projected. This amount it is hoped a generous public will in due course provide."—*New York Med. Jour.*